AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously presented) A method of managing radiation, the method comprising:

providing a semiconducting device having a two-dimensional carrier gas, wherein the semiconducting device comprises at least one of: a heterodimensional diode, a field effect transistor array, a heterodimensional diode array, and an array of rectifying contacts;

exciting the carrier gas by shining a laser pulse having a duration of approximately one femtosecond to ten picoseconds onto the semiconducting device; and

adjusting a frequency of the radiation using a voltage applied to the semiconducting device.

2. (Original) The method of claim 1, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.

3. (Original) The method of claim 1, wherein the adjusting step adjusts at least one of: a gate bias voltage, and a drain bias voltage.

Claims 4-6 (Canceled)

7. (Original) The method of claim 1, wherein the exciting step includes shining the laser pulse onto at least one of: a top side and a bottom side of the semiconducting device.

8. (Previously presented) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto at least one of: a gate-source spacing, a gate, a gate-drain spacing, and a substrate of the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor, wherein the adjusting step includes adjusting a gate length for the gate.

9. (Canceled)

10. (Previously presented) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor, wherein the field effect transistor comprises a transparent gate, and wherein the laser pulse is shone onto the transparent gate.

11. (Previously presented) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor, wherein the adjusting step uses a bias voltage applied to a periodic grating gate of the field effect transistor.

12. (Canceled)

13. (Previously presented) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto at least one of: a gate-source spacing, a gate, a gate-drain spacing, and a substrate of the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.

14. (Previously presented) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto at least one of: a gate-source spacing, a gate, a gate-drain spacing, and a substrate of the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor, wherein the laser pulse has a duration of approximately one femtosecond to ten picoseconds.

15. (Previously presented) A method of generating radiation using a heterodimensional diode, the method comprising:

shining a laser pulse onto at least one of a top side and a bottom side of the heterodimensional diode; and

adjusting a frequency of the radiation using a voltage applied to the heterodimensional diode to adjust a frequency of a plasma wave in a two-dimensional carrier gas in the heterodimensional diode.

16. (Original) The method of claim 15, further comprising adjusting the frequency of the radiation by using a plurality of heterodimensional diodes.

17. (Original) The method of claim 15, further comprising shining a second laser pulse onto a substrate of the heterodimensional diode.

18. (Canceled)

19. (Canceled)

20. (Original) The method of claim 15, wherein the heterodimensional diode includes at least one ohmic contact and at least one rectifying contact.

21. (Previously presented) A method of managing radiation, the method comprising:

providing a field effect transistor having a two-dimensional carrier gas and a periodic grating gate;

exciting the carrier gas using a laser pulse having a duration of approximately one femtosecond to ten picoseconds; and

adjusting a frequency of the radiation using a voltage applied to the field effect transistor.

22. (Canceled)

23. (Previously presented) The method of claim 1, wherein the duration of the laser pulse comprises approximately twenty femtoseconds.

24. (Previously presented) The method of claim 1, wherein a photon energy of the laser pulse exceeds 1.42 electron Volts.

25. (Previously presented) The method of claim 15, wherein the laser pulse has a duration of approximately one femtosecond to ten picoseconds.

26. (Previously presented) The method of claim 15, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.

27. (New) A method of generating radiation using a heterodimensional diode, the method comprising:

shining a laser pulse onto at least one of a top side and a bottom side of the heterodimensional diode; and

adjusting a frequency of the radiation using a voltage applied to the heterodimensional diode, wherein the adjusting step comprises adjusting a width of a depletion region formed in the active layer.

28. (New) A method of managing radiation, the method comprising:

providing a field effect transistor having a two-dimensional carrier gas and a periodic grating gate;

exciting the carrier gas using a laser pulse having a duration of approximately one femtosecond to ten picoseconds; and

adjusting a frequency of the radiation using a voltage applied to the field effect transistor, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.